



STRATEGIC MARKET PERSPECTIVE

Client/Server Impact on Services

Europe, 1993-1998

Market Analysis Programme - Europe

F E B R U A R Y 1 9 9 4

CLIENT/SERVER IMPACT ON SERVICES

EUROPE, 1993-1998

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Abstract

The re-engineering of business processes, IS departments and application systems are all being strongly influenced by the widespread adoption of client/server architectures for new projects.

Client-server experience, tools and applications are only now becoming more widely available in the market. The speed with which the concepts of distributed applications are being embodied into products promises a period of turbulent change for established IS departments, software product vendors and professional services vendors.

This perspective report provides a forecast of the related changes in demand for software and services in Europe as the client/server trend accelerates and as new technology reaches the market. The new services required to implement and support client/server distributed solutions are identified. Conflicting opinions from operational users and IS management on purchasing authority are compared.

The rapid take-up of client/server solutions will completely change the shape of the information services market in Europe. Vendors who can keep pace with new customer demands will gain an essential competitive edge.

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Client/Server Impact On Services, Europe 1993-1998

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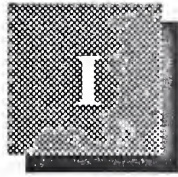
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Introduction

This report an executive perspective in INPUT's Market Analysis Programme for the Computer Software and Services Industry in Europe.

A

Objectives

There is widespread popularity in Europe for selecting or planning client/server architecture as the best solution to distributed application system needs. The popularity of client/server solutions is generating demand for many new software products and services. The opportunities for well prepared vendors to win new business related to client/server architecture have never been greater.

The report is designed to assist vendors in assessing the size of market opportunities and suitable strategies for exploiting the trends towards client/server architectures.

The impact of client/server architectures on the software and services market includes:

- Examining the client/server expectations of users in terms of benefits
- Identifying emerging requirements for new services
- Contrasting the needs and perceptions of IS and operational users
- Forecasting the penetration of client/server related business for each major software and service delivery mode for 1998.

B

Scope and Methodology

This report reviews and analyses the impact of client/server architecture on the nine major sectors that constitute INPUT's definition of the information services market. The software and services delivery modes defined as the information services market are:

- Professional services
 - IS consulting
 - Education and training
- Systems integration
- Systems operations
- Processing services
- Network services
- Equipment services
- Systems software
- Applications software
- Turnkey systems

Full definitions of these sectors or delivery modes can be found in a separate document—INPUT Definitions, 1993.

The definition of client/server used in this report is very broad. The term is used to describe a system architecture in which an application can be implemented to some extent in both client software and server software. The client is usually a requestor such as the user interface of a PC. The server is usually a responding multiuser system such as a database or print processor. Specifically excluded from INPUT's client/server definition are traditional host-based systems which support "dumb" terminals, including X-Terminals.

The research for this perspective is derived from a survey of 38 interviews with European managers. These were divided equally between operational user departmental managers and IS managers.

A wide range of other European vendor, user and U.S. research carried out by INPUT was also used. INPUT invests in a continuous programme of research in support of its subscription programmes around the world, providing a rich source of research data.

The forecast data used in this report is derived from INPUT's market forecasts published for the last thirteen years and now covering nine delivery modes and many industry sectors across sixteen European countries

C**Report Structure**

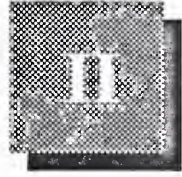
The remaining chapters of this report are structured in the following way:

- Chapter II is an executive overview offering a concise summary of the conclusions of the report.
- Chapter III describes major market trends with commentary on the size and growth expectation for each delivery mode in Europe.
- Chapter IV analyses user research to identify benefit expectations and the conflicting opinions of IS and operational users.
- Appendix A contains the full database of client/server related forecast data.

D**Related Reports**

- *Software and Services Market Forecast—Europe, 1993-1998*
- *Professional Services Refocus for the 1990s—Europe 1993-1998*
- *Client/Server Impact on Major Project Contracting—Europe, 1993-1998*

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Executive Overview

A

Client/Server Market Creates Exceptional Opportunities

The strong trend to client/server is completely re-shaping the market for software and services. But there are still major obstacles. There is a limited choice of software products and there is a lack of suitably qualified experts:

- Suitable technology in the form of software products is only now reaching the market. There is still little choice when selecting a proven set of middleware, software development tools, applications and methodologies.
- Similarly there is an acute shortage of experienced staff who have implemented client/server systems successfully. This is true both within customer IS departments and in the vendor community.

The strength of customer demand for client/server solutions is generating many new business opportunities for vendors. Users are seeking more products, expertise and services from vendors in order to implement and support client/server systems:

- Migration from proprietary to open servers is creating a fast growing market for server systems software to integrate and manage networked applications and data.
- Lack of in-house skills is creating high levels of demand for network-related services such as systems integration, network application services and software support.
- The growing complexity of large networked systems is stimulating demand for outsourced desktop services, where a vendor assumes full responsibility for managing the equipment, software, network and user support.

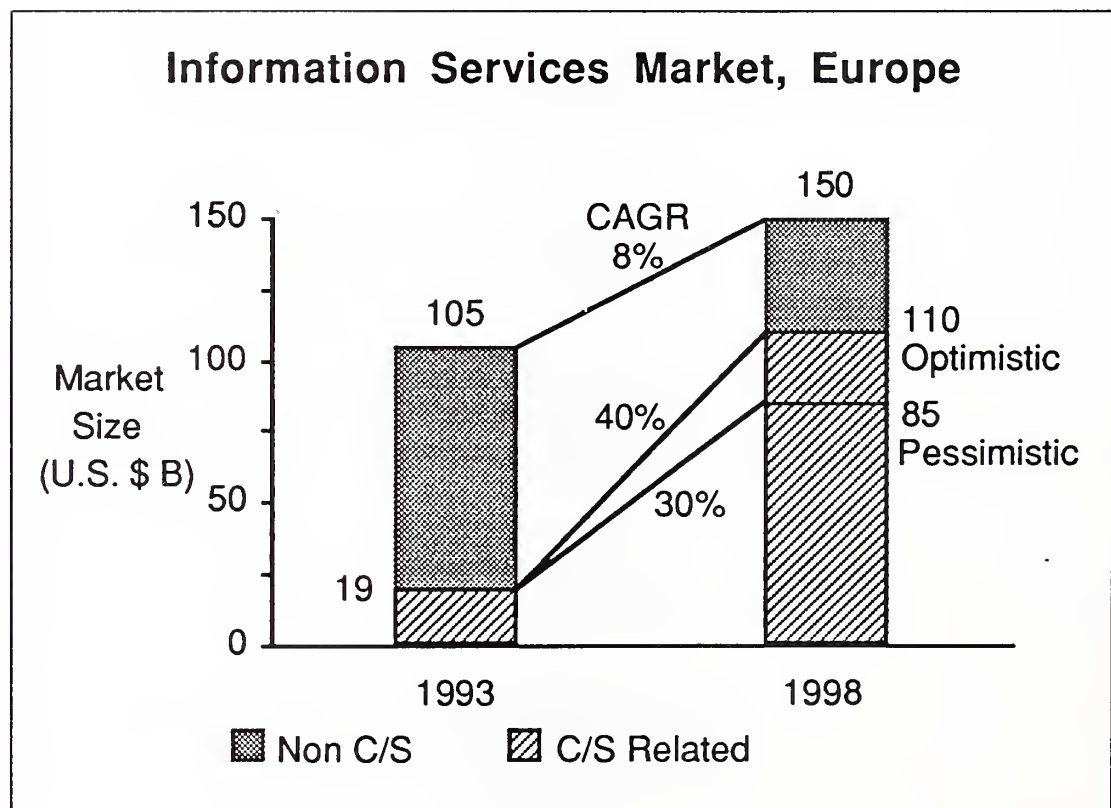
In response to these demands vendors must invest in re-skilling staff for client/server and re-positioning their software and service portfolios.

Vendors must also remain very aware of the power struggle underway between IS management and their user budget holders. Vendors who are slow to respond will find themselves displaced by more agile competitors.

Client/server architecture has caught the imagination of both IS management and operational user management. The large majority are implementing or planning to implement application system solutions using these concepts. IS management wants some freedom from the disciplines and restrictions of host-based mainframe and minicomputer systems. User management wants to extend their positive experience of the flexibility of PCs into networked applications.

The anticipated pace of these changes is illustrated in Exhibit II-1. This shows the rapid growth of business related to client/server (C/S) by 1998. The forecasts are the result of analysing the impact of client/server across 17 delivery modes and subsectors in Europe.

EXHIBIT II-1



The optimistic forecast, equivalent to a 40% CAGR (compound annual growth rate), assumes that customers' expectations will be met by the industry and will not be deterred by the poor economic outlook in Europe. The pessimistic forecast, equivalent to a 30% CAGR, takes a more conservative view, but even so it results in over half the market being client/server related within five years.

These are huge changes in a market where overall spending on software and services is expected to rise by only 8% CAGR. It offers vendors significant opportunities to win new business. Customers will undoubtedly prefer to use those vendors who can show a strong client/server track record.

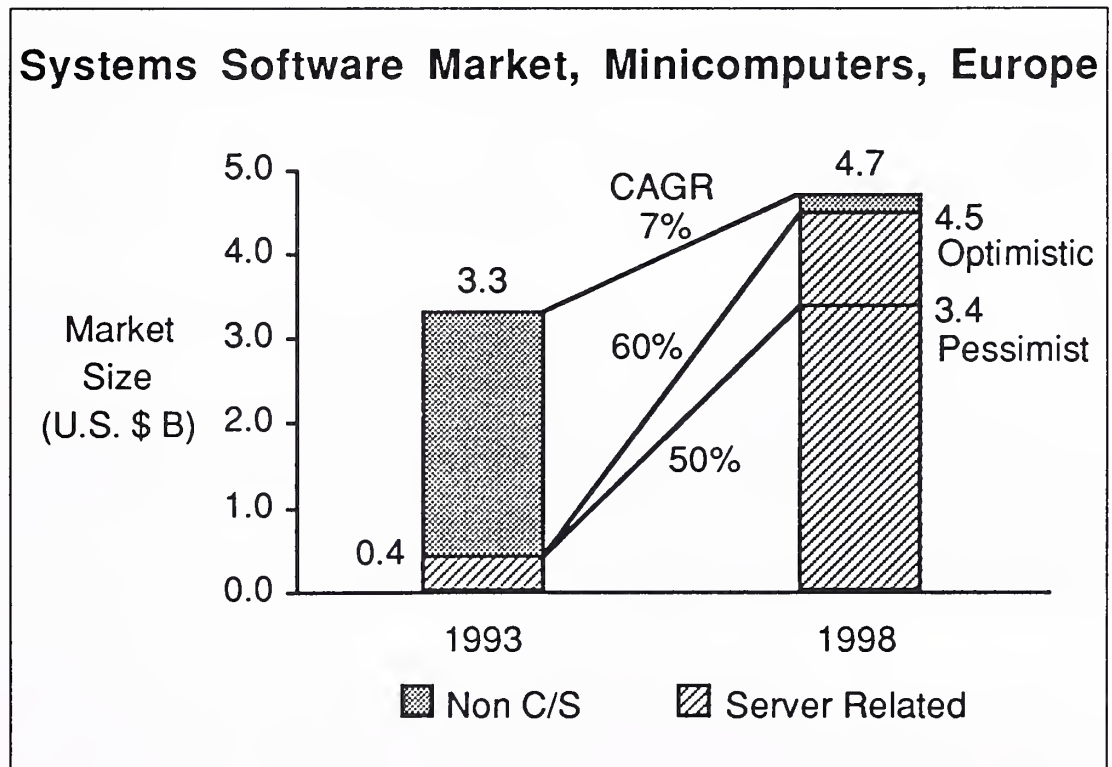
B

Systems Software Product Vendors Focus on Server Market

The trends to downsize and adopt more open systems continue with customers anticipating the benefits lower costs and greater flexibility. There is continuous debate about whether client/server can deliver cost-reduction. It seems likely that the only sure way to achieve lower costs is to impose budget restrictions which force expenditure down. However users still see this as a primary benefit of client/server.

User plans indicate that they will increase the number of servers and LANs faster than they increase the number of clients on networks. Demand for server software will reflect this with faster growth than for client software. Exhibit II-2 shows the rapid rise of server systems software in the minicomputer sector.

EXHIBIT II-2



Reacting to this the PC software vendors, led by Microsoft, are now competing strongly for server market share. Those software vendors active in the datacentre who are scaling down their products for PC networks find themselves with the merchant PC software vendors as new competitors.

C**Network Integration Drives Project Services**

The steady increase in complexity of networked systems has yet to be reversed by the arrival of better software standards and object technology. If Microsoft, Oracle Novell, Lotus and Borland deliver on their promises then software will become easier to use, integrate, network and manage.

Meanwhile users are left short of the necessary skills to implement systems and consume more new software product. They seek help from the professional services vendors and expect to increase their dependence on these vendors in the long term.

User research in the third quarter of 1993 revealed (see Exhibit II-3) the principal services most likely to be requested of external service vendors. Users and managers in France and Germany put a high priority on needing assistance with LAN installation and LAN performance management.

EXHIBIT II-3**Principal Service Requirements, Europe**

- System development and implementation
- Technical support for IS department
- LAN installation
- LAN tuning & performance management
- Systems design

D**Outsourced Desktop Services—Key Opportunitites**

Outsourcing became an accepted business practice in most European countries by 1993. Outsourcing of computer and data network operations management has developed strongly in the U.K. and France. The impact of client/server to date has been primarily to encourage more outsourcing of legacy systems management.

However customers are becoming aware of the management burden imposed by large network of PC's, LANs and servers. Vendors who now specialise in this area of desktop services can anticipate rapid growth in

demand as customer awareness builds. The main problem areas for management are noted in Exhibit II-4.

EXHIBIT II-4

Potential Outsourced Desktop Services

- Equipment resource maintenance, upgrades, re-configuration and purchasing
- Software distribution, licence control, upgrades, support, purchasing
- Network inventory, diagnosis, re-configuration, back-up, recovery
- User training, help desk, security, application testing, upgrades, service level agreements

Once again it is network-related services that users need. Networks have a way of expanding even when there is no overall planning and control. As centralised systems become dispersed around networks it makes business sense to apply the disciplines and controls familiar in datacentres to whole networks. Using external vendors to manage these resources is the next natural step.

E

Vendors Must Focus on Struggle Between IS and User Management

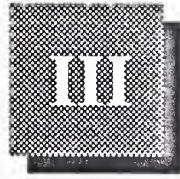
Client/server architectures are increasingly perceived by both operational users and IS managers as the route to satisfying future system requirements. However the widespread acceptance of client/server is accelerating the trend for users to own application budgets and to assert control over investment. At the same time IS management see themselves remaining the primary decision makers for IT.

There is a wide gulf between the opinions of operational users and of IS management. Operational users see themselves as being the primary buying decision maker for applications in over 40% of cases. IS management see the users as having the final decision in under 20% of cases. The influence of operational management is still growing.

The result of this power struggle is expected to be a re-enforcement of user buying power and a more consultative role for IS in future.

Software and services vendors need to remain continually aware of this conflict of opinion when seeking out decision makers. In particular vendors must:

- Recognise that operational users expect to make the key decisions on application solutions
- Continue to primarily address IS management on IS infrastructure topics
- Market to both user and IS management since each believes it has the final say when buying solutions.



Client/Server Market Analysis

A

Client/Server Reshapes Information Services Market

The attractions of downsizing and client/server architectures are generating significant change in the mix of software and services needed in Europe.

While the information services market overall is predicted to grow at 8% compound annual growth rate (CAGR) between 1993 and 1998, the elements related to client/server will grow at between 30% and 40% CAGR. All sectors of the services market, except processing services, will experience rapid growth in client/server related business.

The availability of client/server software products will control the pace at which the market changes. Both datcentre software vendors and PC software vendors will compete head-on for server software market share. The server market will grow faster than the client software market for the next five years.

These large market perturbations represent a wide range of opportunities for vendors to win or lose market share.

Vendors must rapidly re-skill their customers' and/or their own staff in the new technologies and networked systems methodologies. Vendors must introduce new network-centred services. Not only are these moves necessary to meet customer demand for client/server they are also necessary if vendors are to remain cost-performance competitive, especially in the server market.

An analysis of recent INPUT client/server research samples is shown in Exhibit III-1. The planned number of clients increases by 79% over the four years. But the number of servers increases by a factor of four. There is a strong trend to increase the number of servers per client and servers per LAN. This can be interpreted as an expectation that applications supported in the past on mainframes and minis will be moved onto servers in future.

EXHIBIT III-1

Client/Server Plans Characteristics, U.S., 1993

Characteristic	1993	1997
Average no. of clients	1,294	2,318
Average no. of servers	24	96
Average no. of LANs	34	78
Server/LAN ratio	0.71:1	1.23:1
Client/server ratio	70:1	55:1

124 respondents

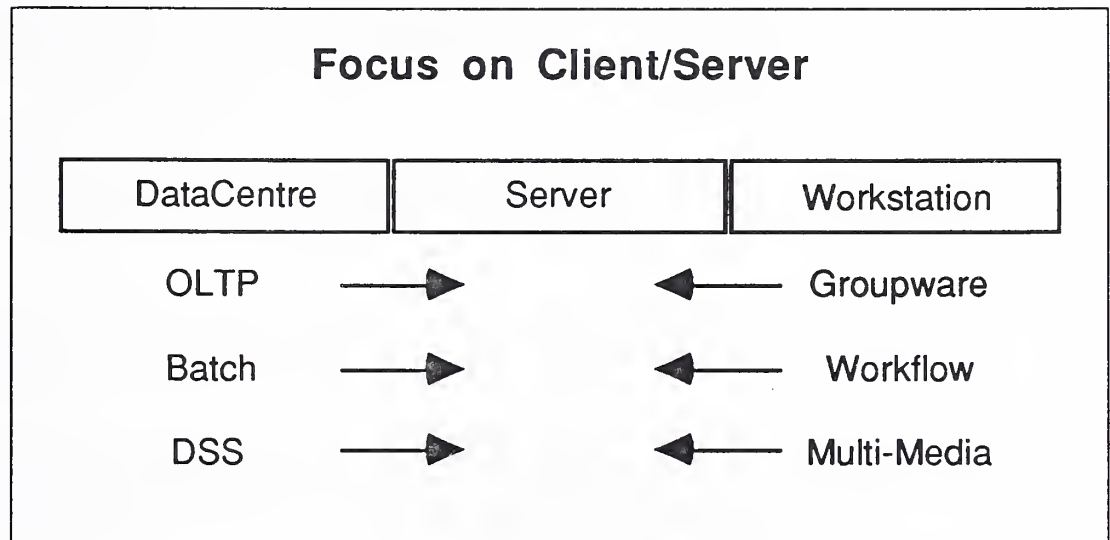
The industry seems to be giving all its attention to the server market. Nearly all new processor products are labeled servers rather than minicomputer mainframe. New server-oriented software products are emerging both from traditional datacentre software vendors and from PC/workstation software vendors.

This focus on the server element of client/server is illustrated in Exhibit III-2. Traditionally the datacentre has had expertise in OLTP, batch and decision support. The PC vendor community is becoming expert in groupware, workflow and multimedia. In some ways these two vendor groups are offering different solutions to the same problems:

- OLTP and groupware both seek to solve the technical problems of sharing information/documents in real time among a number of people simultaneously.
- Batch processing and workflow both solve problems associated with sequential repetitive processes, dealing with one user at a time.
- Decision support and multi-media both integrate information from different sources in order to communicate ideas more effectively.

Both sets of vendors now compete for the customers' funds in the server market.

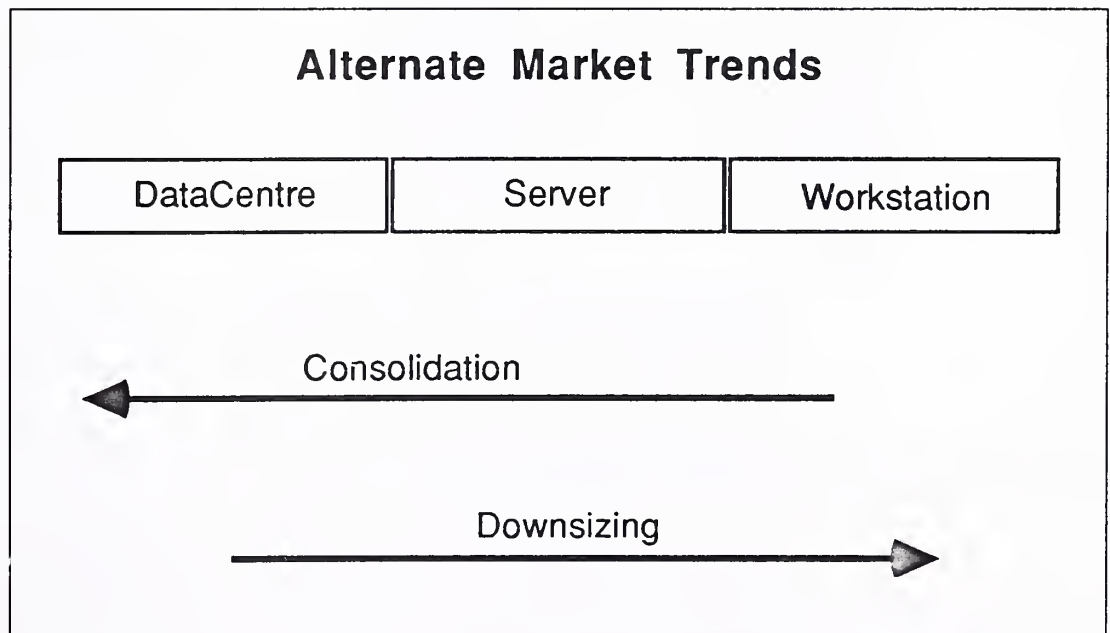
EXHIBIT III-2



Downsizing has attracted a lot of attention. The impact of reducing IS budgets and buying smaller, more cost effective systems has been very visible. Exhibit III-3 introduces the less well discussed trend of consolidation. This operates in the opposite direction to downsizing as user consolidate a number of smaller systems into a larger one.

There have been many examples of this trend in the mainframe sector with regional datacentres being consolidated to just a few more powerful sites. It is less obvious as a trend in the server market, but many small PC LANs are now coming up for replacement/upgrade and IS management will be looking for ways to keep costs down.

EXHIBIT III-3



These two trends: downsizing and consolidation, are motivated by two different, often opposing, user demands: effectiveness and efficiency. In many business situations these two needs alternate depending on business circumstances.

Downsizing is usually driven not only by the potential for cost savings but also by a need to be more responsive and flexible towards user requirements.

Consolidation is driven not only by direct cost saving expectations but also by economies of scale and reductions in resource management workload.

The end result of both trends is a lowering of costs for the user, which means lower revenues for vendors. INPUT's market model assumes that such savings are still spent with the IS industry, as reflected in the forecasts which follow.

High European Growth Rates Forecast for Client/Server Services

The rapid introduction of client/server products and projects is stimulating demand for related services. In the following exhibits INPUT has prepared forecasts for each delivery mode. These are derived from the full European forecasts for each market sector showing the proportion of each delivery mode which can be attributed to client/server in 1993 and the amount anticipated for 1998. A database of the following forecasts is listed in Appendix A to this report. Two forecasts of the 1998 figure are given in each case, one pessimistic, the other optimistic.

The pessimistic forecasts assume relatively slow adoption of client/server technology over the next five years. The user plans revealed in the research in Chapter IV are assumed to be over optimistic. Conventional host-based information services may still represent nearly half the market in 1998. Even with this pessimistic view the forecasts still average a 30% compound annual growth rate (CAGR) over the next five years.

The optimistic forecasts assume that the prevailing user views will hold, that the release of client/server technology will come to dominate the market and that difficult economic pressures will accelerate the move to client/server. When all the individual market segments are summed, the optimistic view is of a client/server-related information services market growing at an average of 40% CAGR to 1998.

There is comment on each of the delivery modes given below, followed by a summary for the whole software and services market:

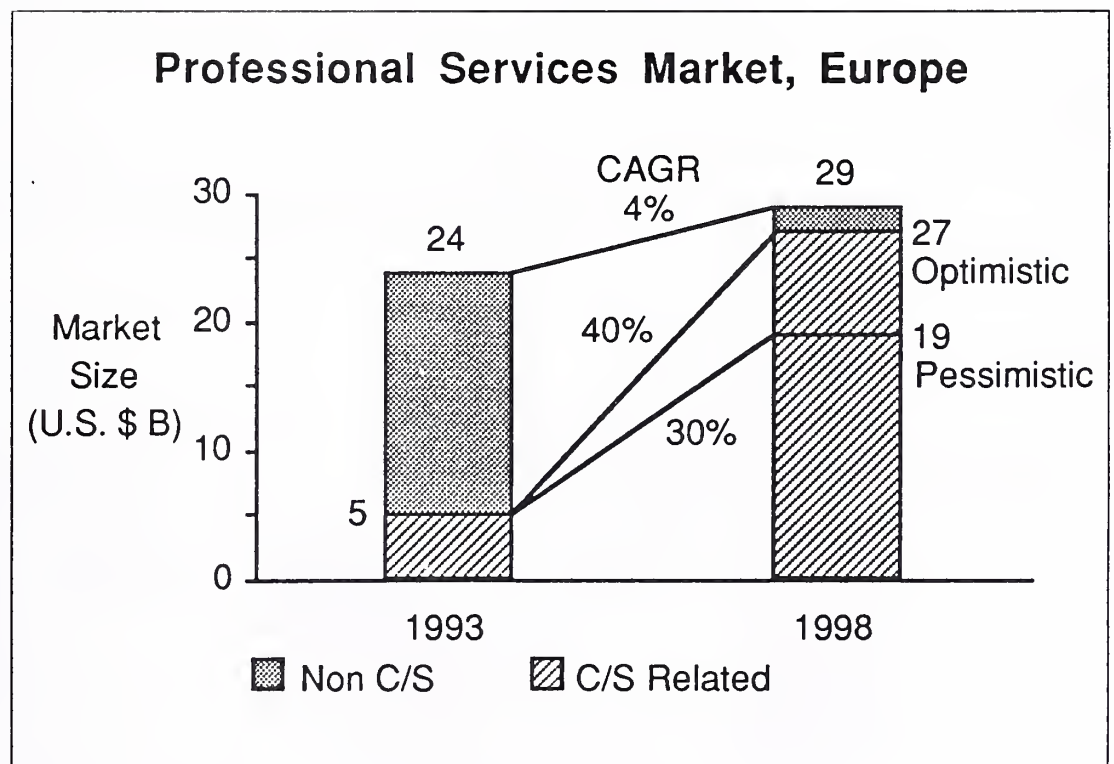
- Professional services
 - IS consulting

- Education & training
- Systems integration
- Systems operations
- Processing services
- Network services
- Equipment services
- System software products
- Application software products
- Turnkey systems

1. Major opportunities in professional services

The market for professional services is expected to be almost static over the next five years, growing at only 4% CAGR as shown in Exhibit III-4. This is a result of the continuing trend away from custom software development as customers find it harder to justify their own developments in terms of cost and risk compared to configuring and integrating off-the-shelf application software packages.

EXHIBIT III-4



The market may be almost static in size but it is by no means static in nature. The effect of client/server technology will be to create sub-sectors of opportunity exhibiting very rapid growth.

Already many vendors are investing strongly to exploit the demand for client/server-related systems, products, skills and expertise. For example Andersen Consulting reported that in 1992 some 70% of its new projects

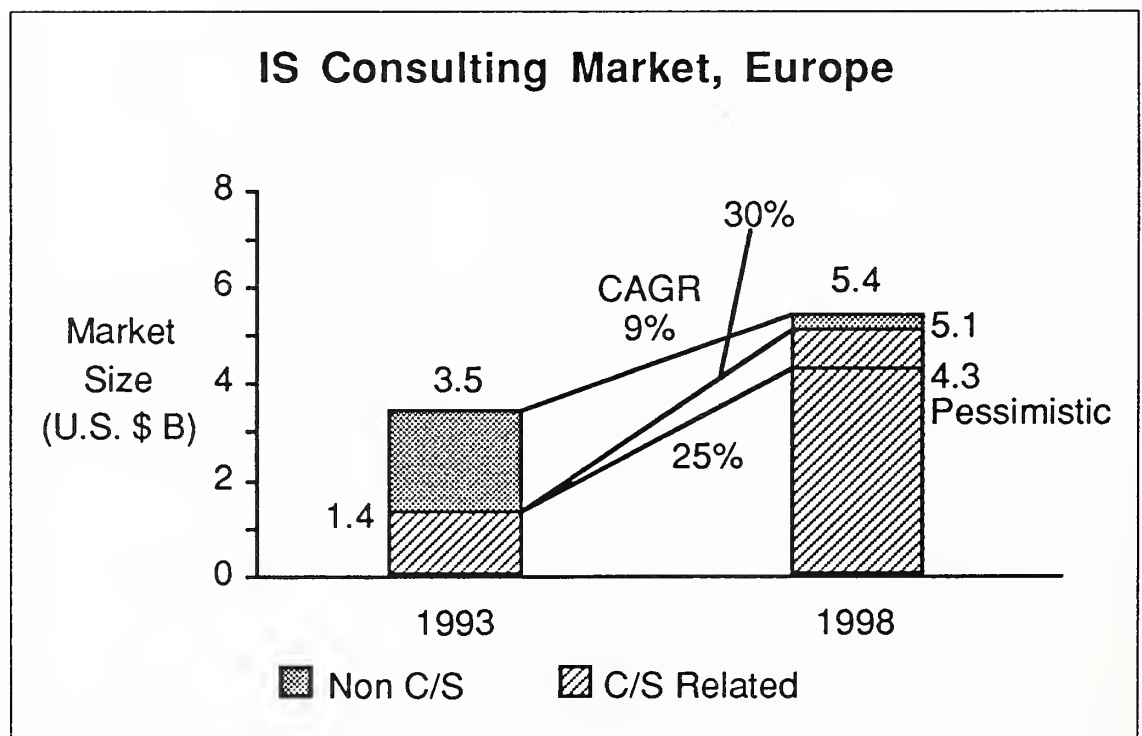
were client/server. In 1993 this proportion had risen to nearly 100%. In order to respond quickly to these rapid market changes Andersen Consulting has been re-training staff in a concentrated programme for the last two years. It is estimated that 15,000 staff had participated in this programme to the end of 1993. Their own in-house staff development programmes have always been a key success factor for Andersen Consulting, receiving high management priority.

Not only do such pre-emptive moves allow vendors to react quickly to new market demands, they also stimulate the market to move faster still.

One key sub-sector of professional services is IS consulting. Exhibit III-5 shows the lead role that consulting services based on client/server are assuming. In 1993 some 40% of consulting fees were related to client/server and this is expected to increase to between 80% and 95% by 1998.

The effect is to create major opportunities for IS consultancies which can provide advice and guidance to clients to help them exploit client/server. In particular these will include consulting in the areas of network management, business process re-engineering, system design and network performance.

EXHIBIT III-5



A further important sub-sector of professional services is education and training. Exhibit III-6 shows the impact of training on client/server products such as RDBMSs and server middleware. In 1993 some 30% of training fees were related to client/server and this is expected to increase to between 70% and 90% in the next five years.

EXHIBIT III-6

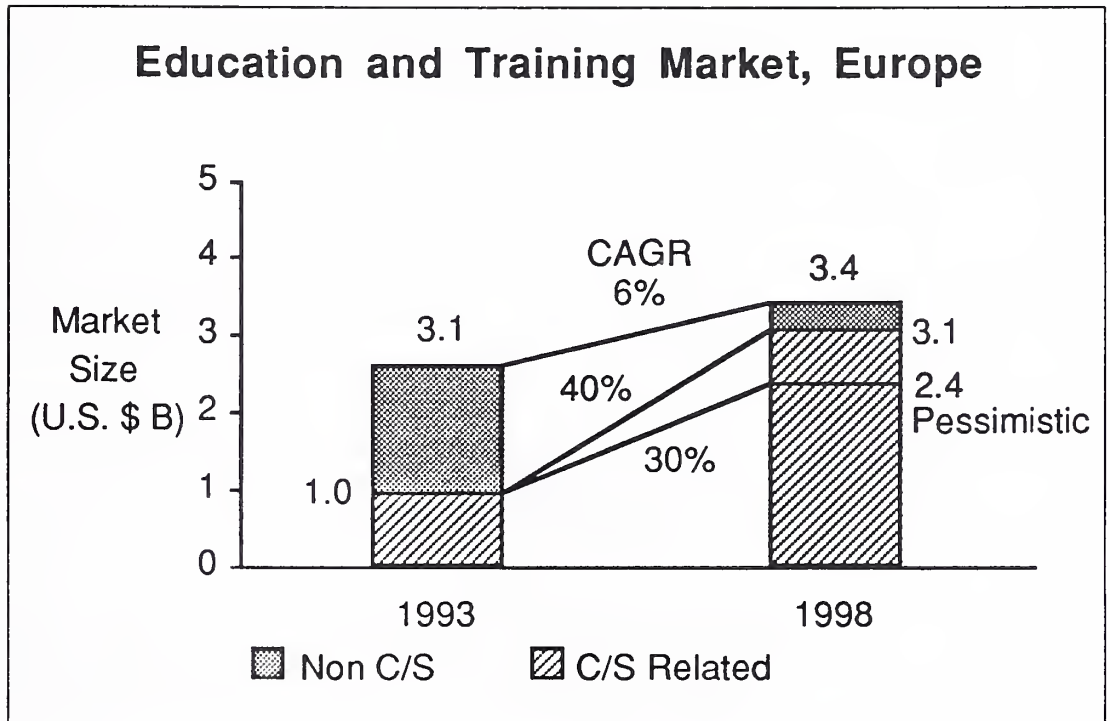
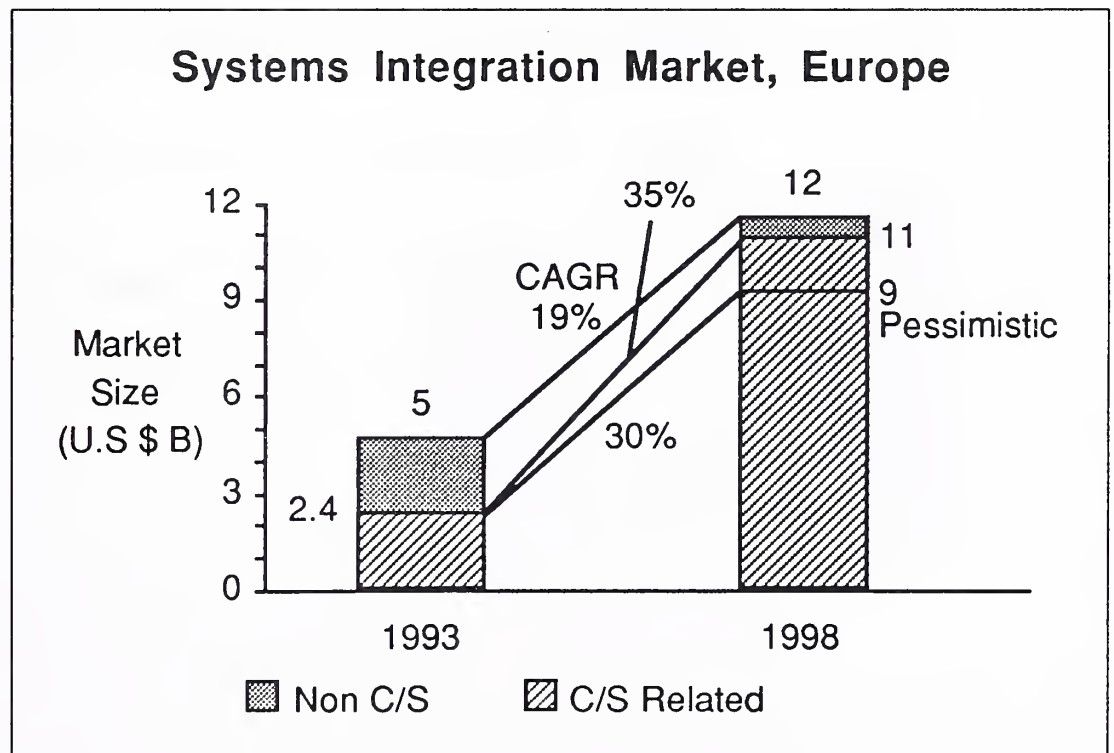


EXHIBIT III-7



2. Customers become more reliant on systems integrators

The need for specialist skills in implementing large client/server systems leads users to seek more help from external system integrators. Although the overall size of systems integration projects is falling, expenditure still shows healthy growth.

Already half of all systems integration business in Europe is based on client/server architectures. The amount of software product within a typical contract is also rising as the proportion spent on equipment falls. Exhibit III-7 shows how the market share of client/server systems will grow to a maximum 95% of the market by 1998.

Vendors who are slow to develop their client/server implementation skills will be in danger of being forced out of the market.

3. Client/server outsourcing will focus on desktop services

Outsourced systems operations includes vendor management of platform operation, application operations and desktop services. The main impact of client/server will be to stimulate the growth of demand for desktop services.

The increasing systems complexity inherent in building dispersed client/server systems results in a significant management burden. The difficulty of managing a networked resource of, say, 1,000 PCs and 20 servers should not be understated. Among the problem areas for management are:

- Equipment resource maintenance, upgrades, re-configuration and purchasing
- Software distribution, licence control, upgrades, support, purchasing
- Network inventory, diagnosis, re-configuration, back-up, recovery
- User training, help desk, security, application testing, upgrades, service level agreements

Software tools to assist managers responsible for these functions are still in limited supply. But work is underway at many of the major vendors to produce suitable tools, since the lack of them will hinder the expansion of the market for all other networked software products.

Vendors who can successfully take on some or all of these management functions from the users can participate in the fast growing client/server related market shown in Exhibit III-8.

EXHIBIT III-8

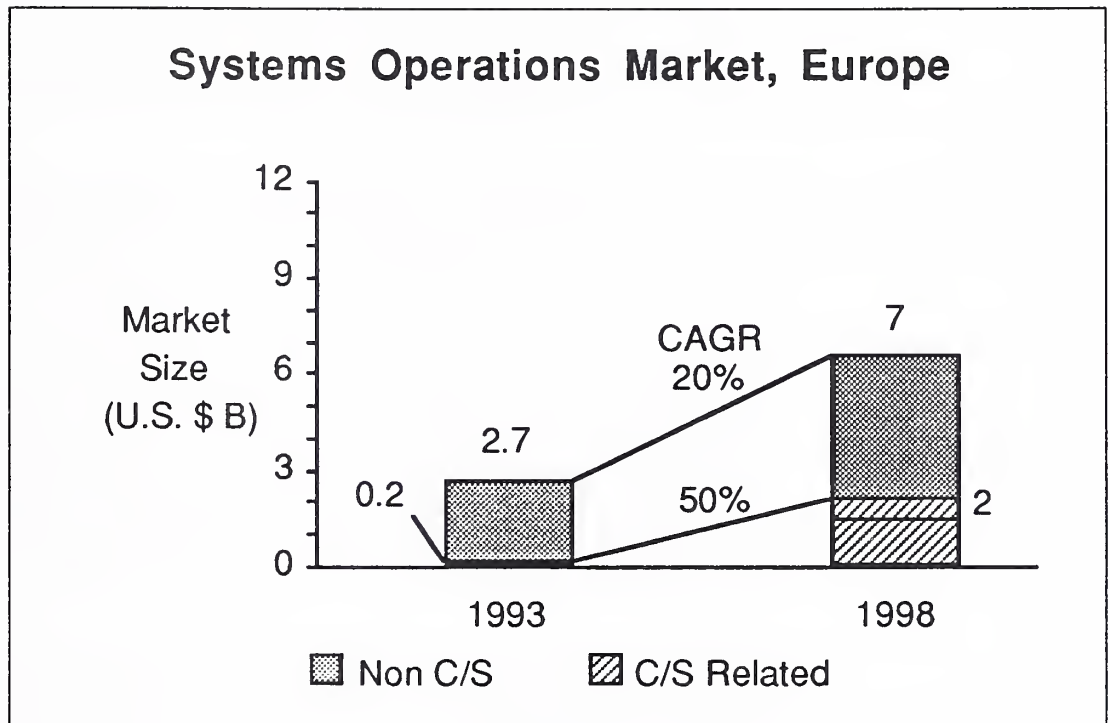
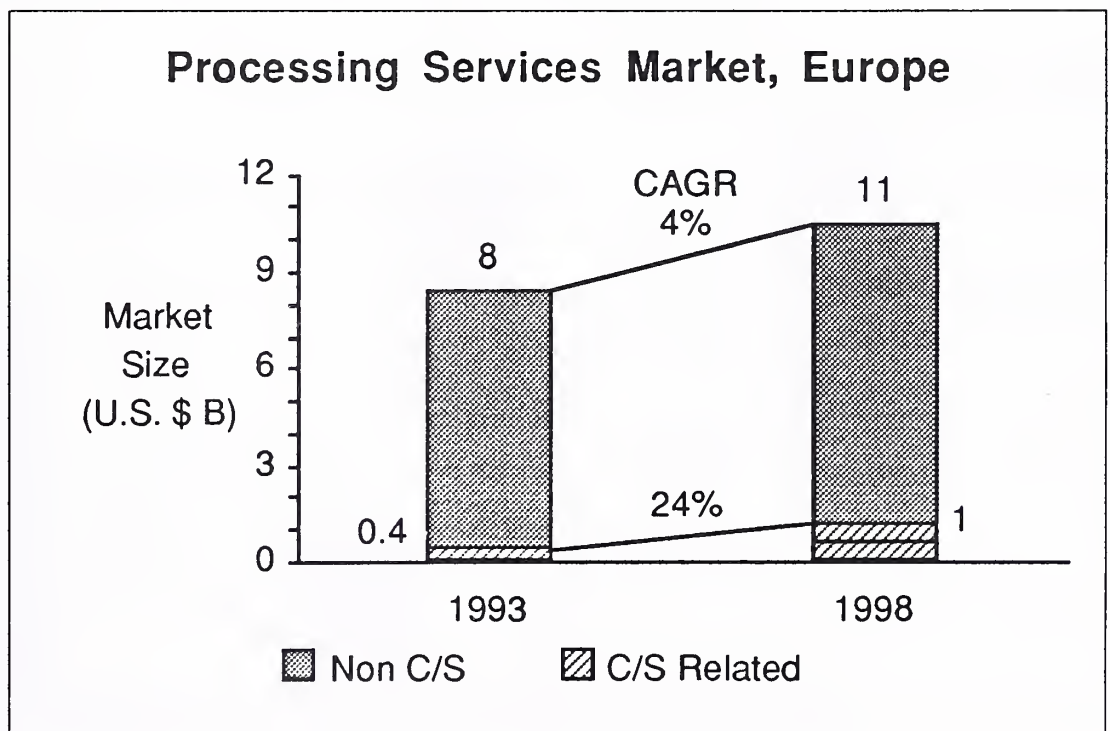


EXHIBIT III-9



4. Low client/server penetration in processing services

The main impact of client/server technology on the processing services market will be:

- to attract customers away from these services to in-house application systems, forcing vendors to continue to improve cost/benefits.
- to enable vendors to reduce system costs and offer new higher value services.

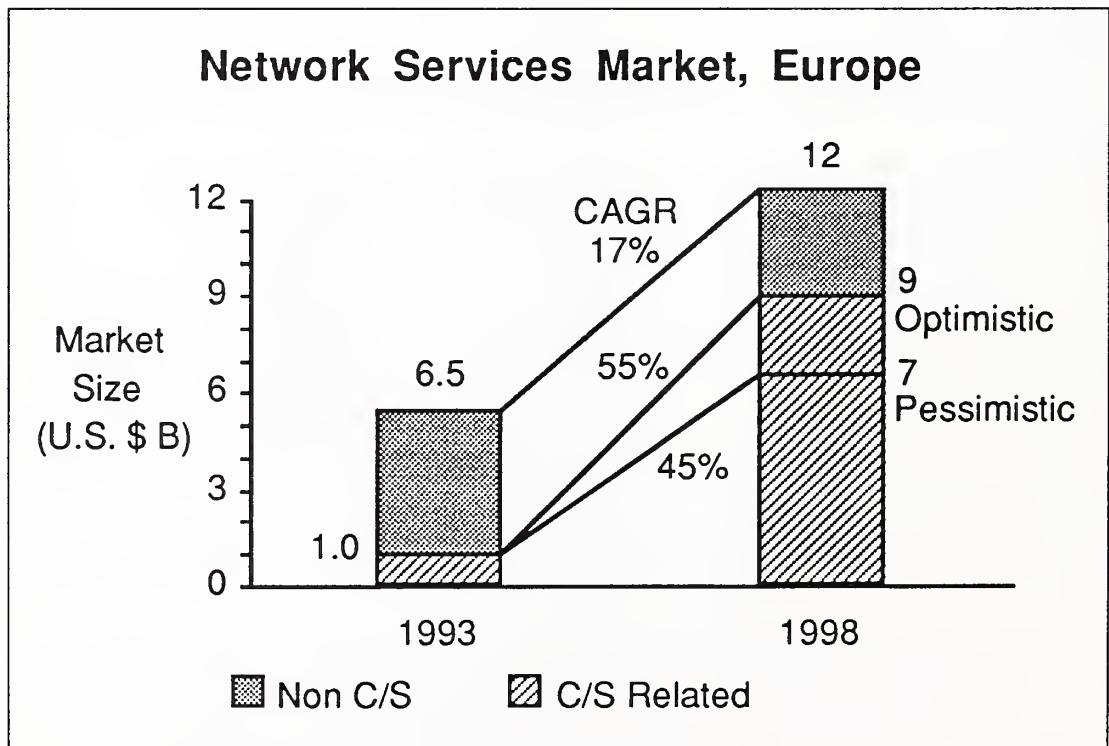
Some processing services vendors will be able to use client/server to offer improved services to clients and this is the trend illustrated in Exhibit III-10.

5. Network services vendors adopt client/server

The network service market includes electronic information services such as on-line databases, network application services such as EMail and EDI, and network management services. Networking is central to the concepts of client/server architectures. So network services vendors will find demand growing and will need to introduce new products and services in order to remain competitive.

The adoption of equipment and software standards by users for both servers and clients increases the scope for network services vendors to enhance their product offerings. It will become essential for network services to support client/server architectures, though simpler forms of communication will continue to be used. Exhibit III-10 shows a maximum of 75% of the market being client/server related by 1998.

EXHIBIT III-10



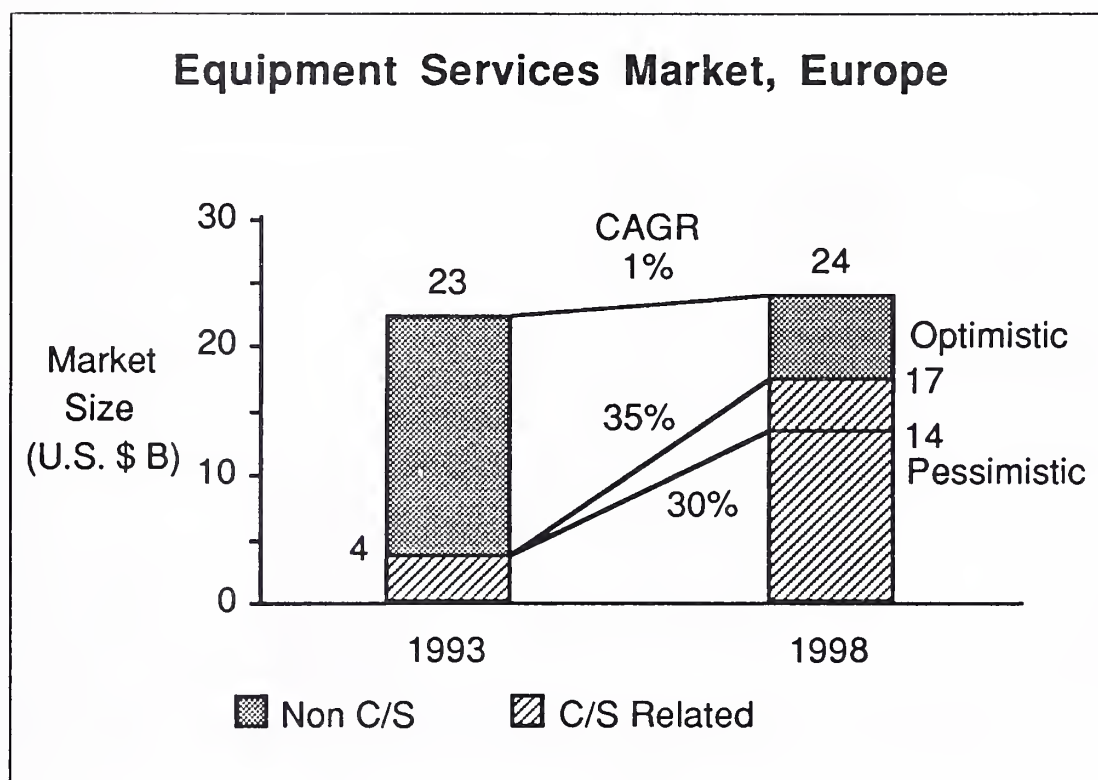
Within this sector electronic information services will see the slowest take up of the new technologies, whereas INPUT expects demand for client/server network management services to grow very rapidly.

6. Legacy systems slow equipment services changes

The equipment services market combines equipment maintenance with environmental services. These activities are normally associated with the customer services of equipment vendors and third-party maintainers.

In 1993, the majority of environmental services, such as network installation, were already client-server related. In contrast, only about 5% of equipment maintenance revenues were for client/server systems. Exhibit III-11 shows the resulting market split. The optimistic forecast assumes that 40% of equipment maintenance will still not be client/server-related by 1998. In the more pessimistic forecast, maintenance of older legacy systems will slow the change, still representing 60% of the market.

EXHIBIT III-11



C

Software Product Availability Will Control Pace of Change

The pace at which client/server architectures can be successfully adopted by the market is highly dependent on the speed with which vendors can introduce suitable software products. There is hardly a single new software product announced today that does not carry a "client/server" label, but it will still take some time for these new products to become part of normal

systems implementation practice. Typically it takes two to five years for new technology to gain widespread use.

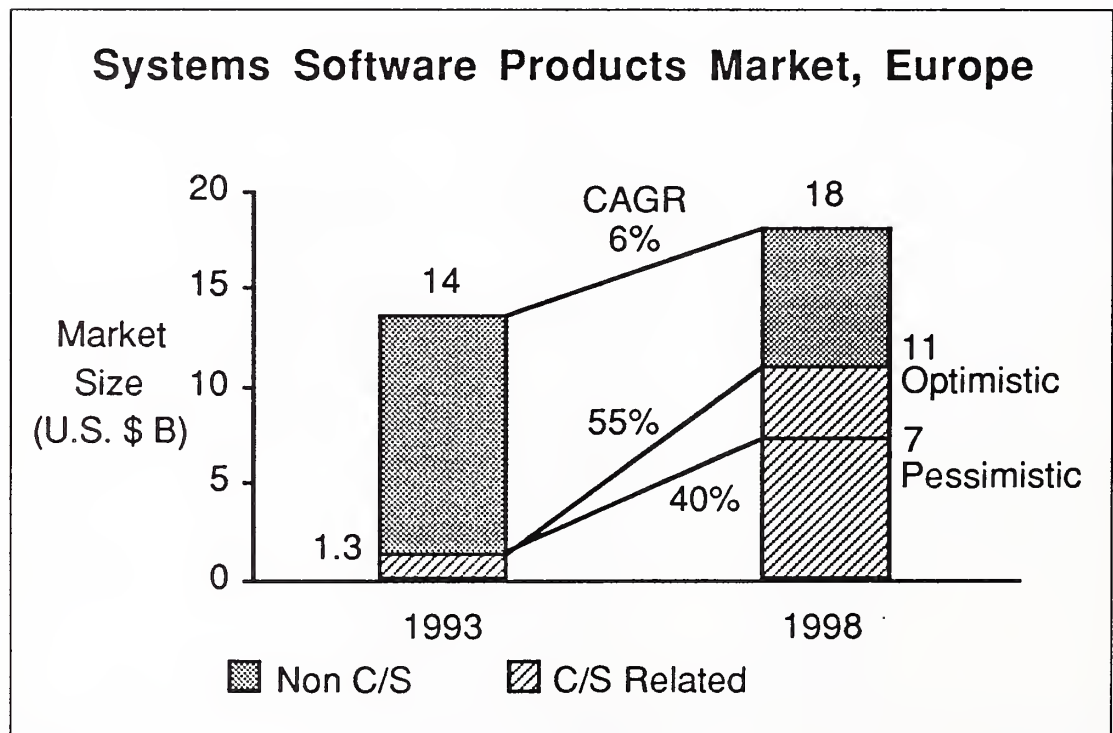
1. Systems software vendors focus on server market

Growth in the PC software market in 1993 has slowed for the leading vendors such as Microsoft, Novell and Lotus. As a result these PC software vendors are turning their attention to the server software market. Competition is becoming very fierce as the protected proprietary mini and mainframe markets move to open server platforms.

Client/server growth prospects are stronger in the server market than for PC's. The optimistic forecast shown in Exhibit III-12 assumes that the server market will grow from about 35% to 50% of the total client/server market by 1998, at the expense of the client systems software market. This is due to the changing buying habits of the customers as they move their spending away from proprietary to open server systems.

The overall dominance of mainframe platform systems software expenditure results in the most optimistic forecast giving client/server software only a 60% market share by 1998.

EXHIBIT III-12



2. Applications software products will drive client/server market

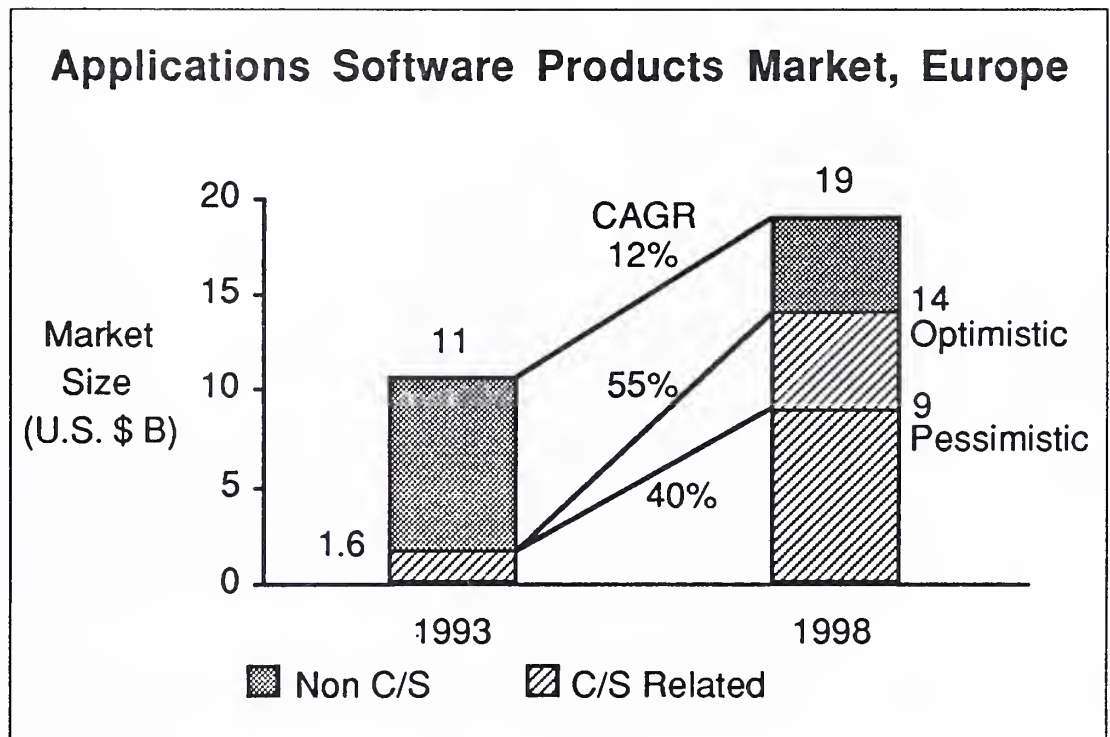
Applications requirements continue to be the main driver for new IS systems. Cost and risk considerations lead customers to favour application products rather than custom developments. Demand for applications

software products has been growing much faster on workstation and PC platforms than on mini or mainframe computers.

However, over the next five years expenditure on application software for servers is expected to grow faster than that for clients. Client/server concepts promise that the integration of these applications will become much simpler.

Between 1993 and 1998 the market for client/server application software products on mid-range servers will grow very rapidly at between 55% and 65% per year. The market on clients, on workstation or PC platforms, will have grown rather slower at 35% to 50% per year. Exhibit III-13 shows the effect of these growth rates on the overall applications software product market. The market on mainframe servers is too small to have much impact on the total figures.

EXHIBIT III-13



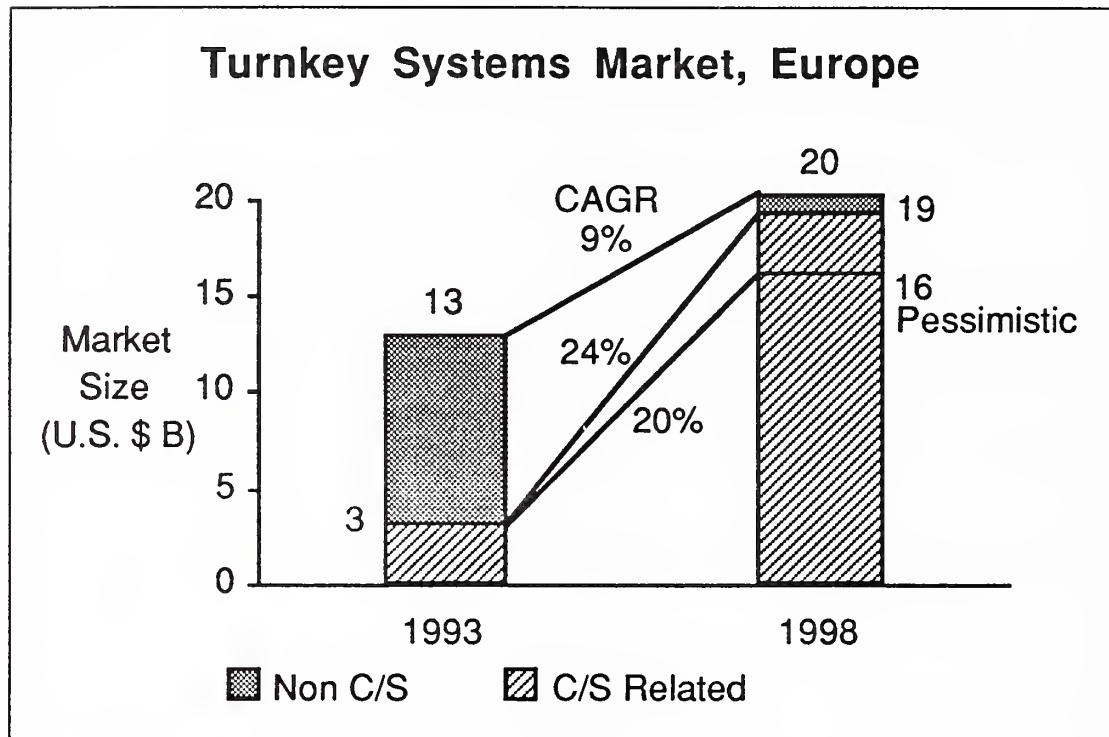
3. Packaged turnkey systems switch to client/server architecture

IS solutions involving a package of application and systems software products, equipment and professional implementation services (turnkey systems) are most commonly offered by value-added resellers, VARs. Many of these smaller vendors are very fast in responding to new market needs or changes in technology which improve cost-performance.

So this market can be expected to adopt the advantages of client/server ahead of the other delivery modes. As illustrated in Exhibit III-14 even the pessimistic scenario gives client/server an 80% market share of turnkey

systems by 1998. It will be difficult for vendors to compete successfully in 1998 without client/server turnkey systems.

EXHIBIT III-14



D

Total Change for Information Services Market

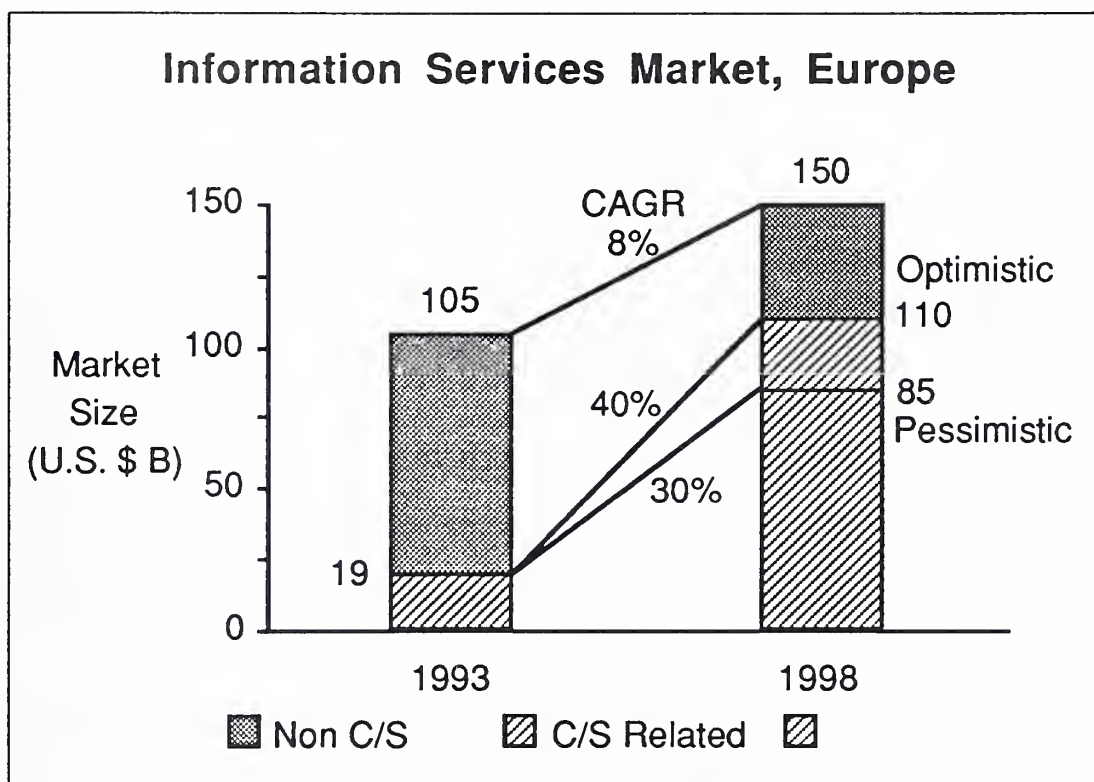
When all these delivery modes are combined the resulting forecast for the whole information services market (Exhibit III-15) shows a 30% annual growth rate for even the pessimistic scenario. Such a rapid change in the underlying technology will result in considerable market instability. In this highly competitive arena successful software and services vendors will need to:

- stimulate customer loyalty by increasing perceived satisfaction
- attract new business by enhancing market image and competitive positioning
- completely revise their services portfolios
- retrain their staff in new methodologies and products
- continuously cost-reduce their delivery processes to remain price-competitive

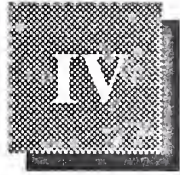
Smaller and possibly younger vendors have the opportunity to gain competitive advantage in this time of change. They may be able to adopt new technology and offer innovative new services faster than the major service vendors. The widespread acceptance of client/server technology could present a significant challenge to the long-term growth prospects of the major vendors.

For most services market leaders it is their large critical mass, knowledge of conventional system development techniques and ability to manage the risks inherent in expensive projects which has given them success. Attributes such as flexibility, speed of response and reducing costs have not played such a large part. In future, it may well be these attributes which separate the winners from the losers.

EXHIBIT III-15



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Users Need New Services

A

Users Expect Client/Server to Lower Costs and Increase Flexibility

Users who have invested in PC-based applications have discovered that desktop IT systems can be a low cost purchase which is highly flexible in use. This realisation is one of the key driving forces behind the trend for user management to control more and more of the budget and spend more of it on the supply and support of information systems direct from vendors.

Client/server architecture has emerged with the potential of meeting these expectations of lower costs and greater flexibility. It has also raised the expectation that systems which integrate desk-top, network, server and datacentre information are now feasible within existing, or lower, budgets.

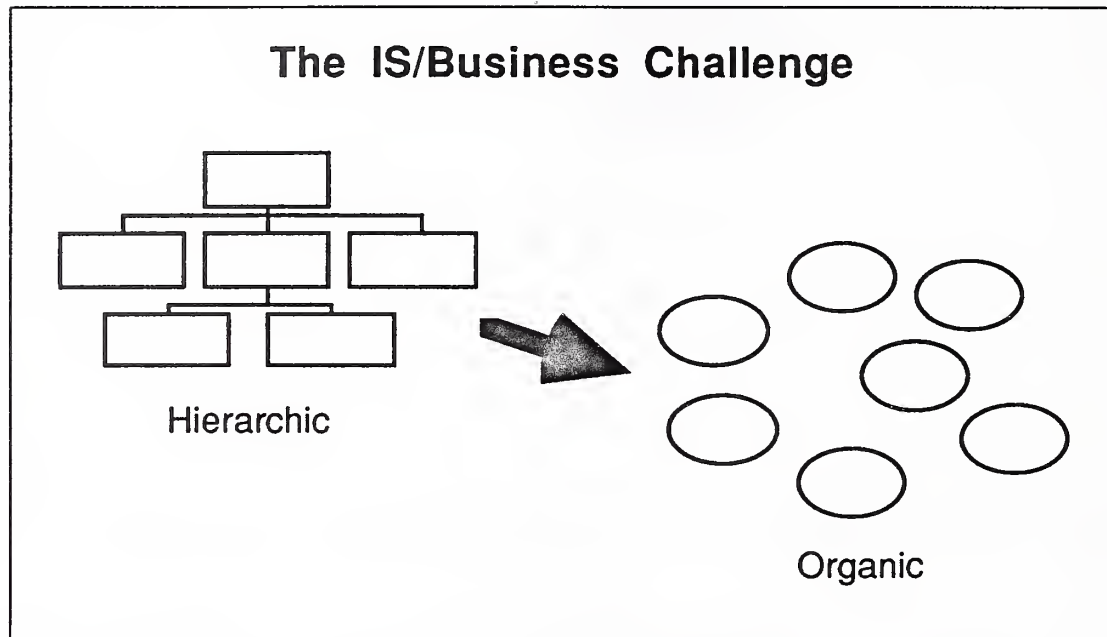
Adoption of client/server technology will create demand for new professional services from vendors. Research confirms that these will be largely network-centred services and that demand will come from both IS departments and direct from user departments.

Both operational users and IS management are in agreement that client/server will provide suitable systems solutions in future. But they are not in agreement as to who will control the buying process. IS management in many organisations will have a struggle to retain purchasing authority as operational users strengthen their control of budgets.

1. Client/server architecture mirrors new business structures

Many companies in the business community are faced with the need to radically change the way they are organised. In order to remain competitive and become more responsive to their customers these companies are re-engineering away from traditional hierarchical structures into looser forms of team-based, more autonomous, organic business units as illustrated in Exhibit IV-1. Central control, inherent in hierarchies, is giving way to more local decision making. Empowering staff to react quickly and flexibly to new demands is a key objective of these new structures.

EXHIBIT IV-1



When comparing centralised host-based IS architectures with client/server architectures a very similar picture of changing structure is apparent. In fact the trend to client/server in IT seems to mirror the trend to organic structures in business. This is why client/server has become such a popular choice for future systems. Client/server provides an IT infrastructure which has the same characteristics as the business processes it is intended to support.

This trend to change organisational architecture from hierarchical to organic applies equally to the structure of the IS department. The major challenge for IS departments is to re-engineer themselves to provide better value and quicker response to their customers, the operational users. IS departments are re-engineering to:

- Empower business process changes, providing applications which support new business processes.
- Compete for internal business against the provision of solutions and services by external vendors.
- Manage vendor/user contracts which still require significant specialist technical knowledge for success.
- Consolidate and standardise elements of the IT infrastructure to keep costs down and benefit from economies of scale.

2. Benefits are anticipated for IS and operational users

The attraction of client/server architecture is not only that it makes it simpler to build information systems which mimic the organisation and process structure of a distributed business. Users also expect significant benefits

both in improving the cost-effectiveness of the IS function and in the flexibility of systems in use.

The main sources of improved value to be gained from the IS department, in order of importance, are:

- IS staff headcount reductions
- Easier integration of systems and applications
- Improved platform cost/performance
- Rapid application development (RAD) techniques

Parallel research in the U.S. revealed that the highest expectations for financial savings perceived by IS management in the U.S. were, in priority order:

- Database administration
- Hardware and software
- Application development
- Headcount and productivity

The increased flexibility needed for operational users is anticipated mainly through:

- Ease of use and user/office productivity
- Ease of change or expansion
- Increased choice of products and vendors
- Less individual vendor dependence

B

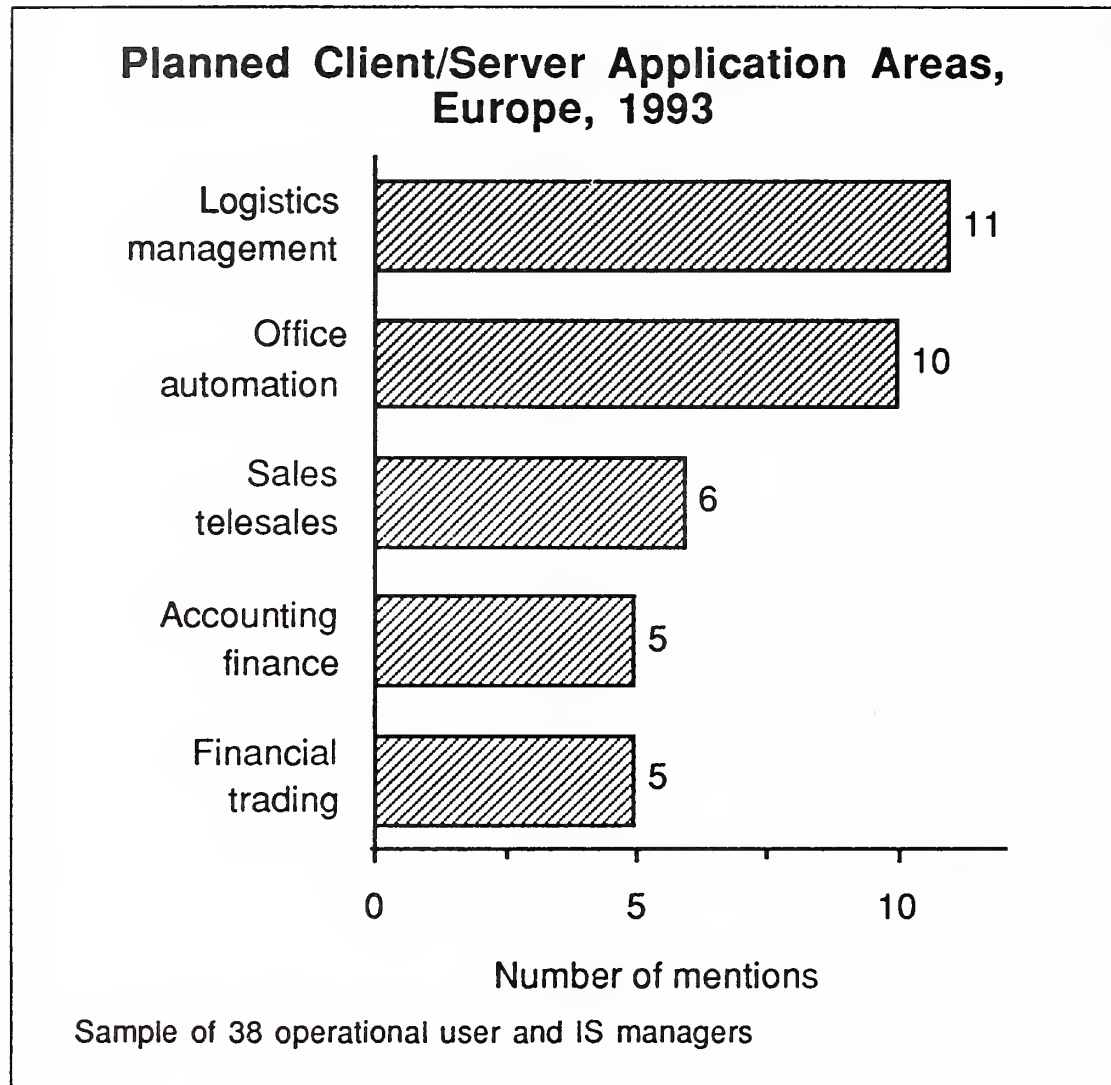
Client/Server Plans Create Demand for New Services

1. Distribution functions head the application plans for client/server

The adoption of client/server architectures is particularly attractive for applications within distribution functions, such as logistics or sales. Business functions which are often relatively small but replicated and widely dispersed are identified as most popular in INPUT's recent research into client/server trends.

Exhibit IV-2 shows how application areas which are not necessarily well suited to centralised databases are being planned for client/server.

EXHIBIT IV-2



It is clear that users expect client/server products to offer cost-effective solutions to such distributed or small scale application areas. In the past computerisation may not have been financially viable for these applications using more expensive and less user-friendly technology.

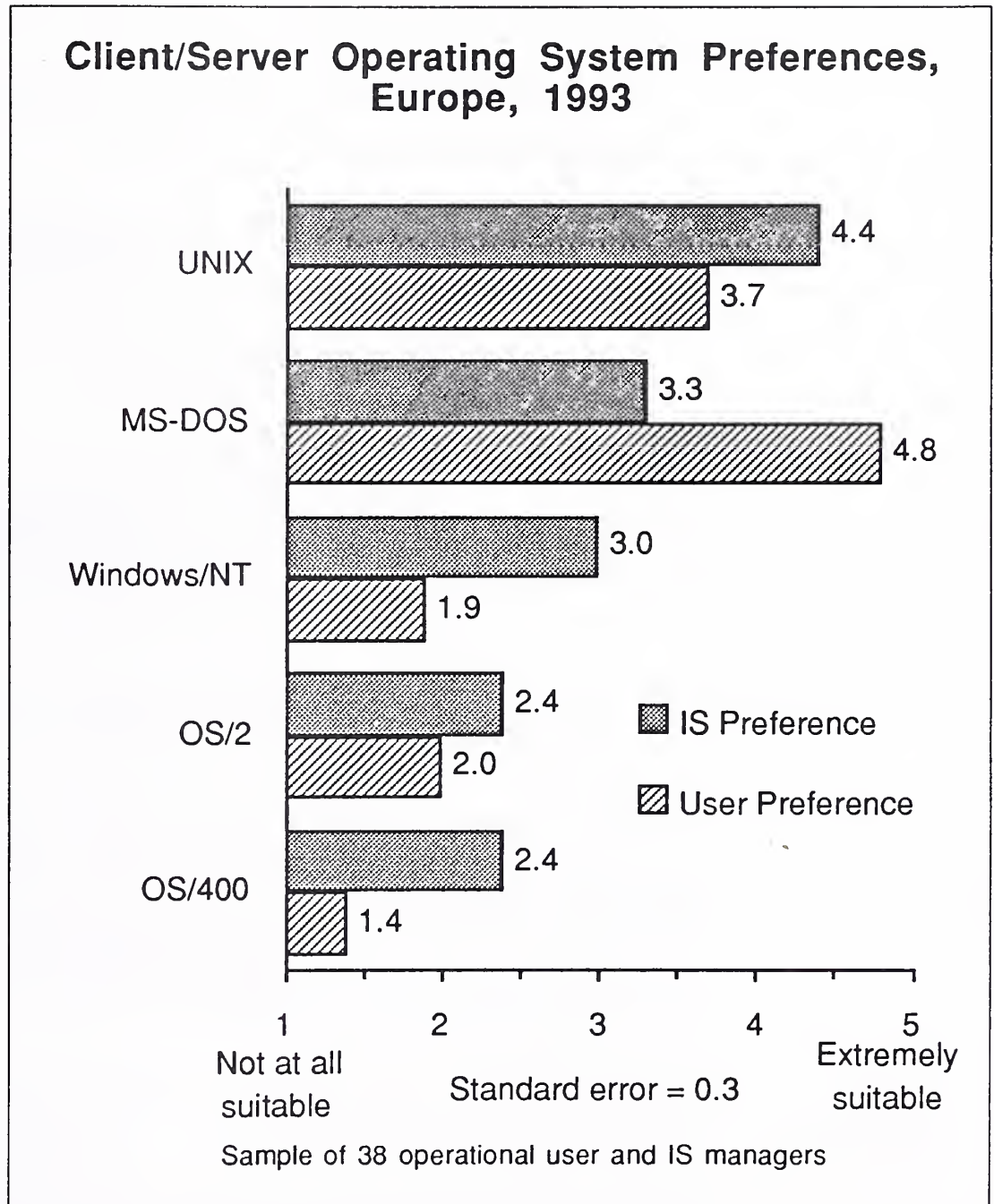
For vendors this is another indication that the customer for client/server is more likely to be among operational user management than in IS management. Further evidence of this is discussed later in this chapter.

2. No reduction in the number of standard operating systems

There is a great deal of speculation in the press and much posturing among vendors to determine which operating systems will be the platforms of choice in future. With the open systems movement well established in Europe buyer preferences there are different from in the U.S.

The operating systems preferences expressed by a mix of operational users and IS management in Europe are shown in Exhibit IV-3. Users show an almost total preference for MS-DOS, while IS managers were very positive about the suitability of UNIX. Windows NT had been announced but not released. Even so IS managers were open minded with many expecting to evaluate the product.

EXHIBIT IV-3

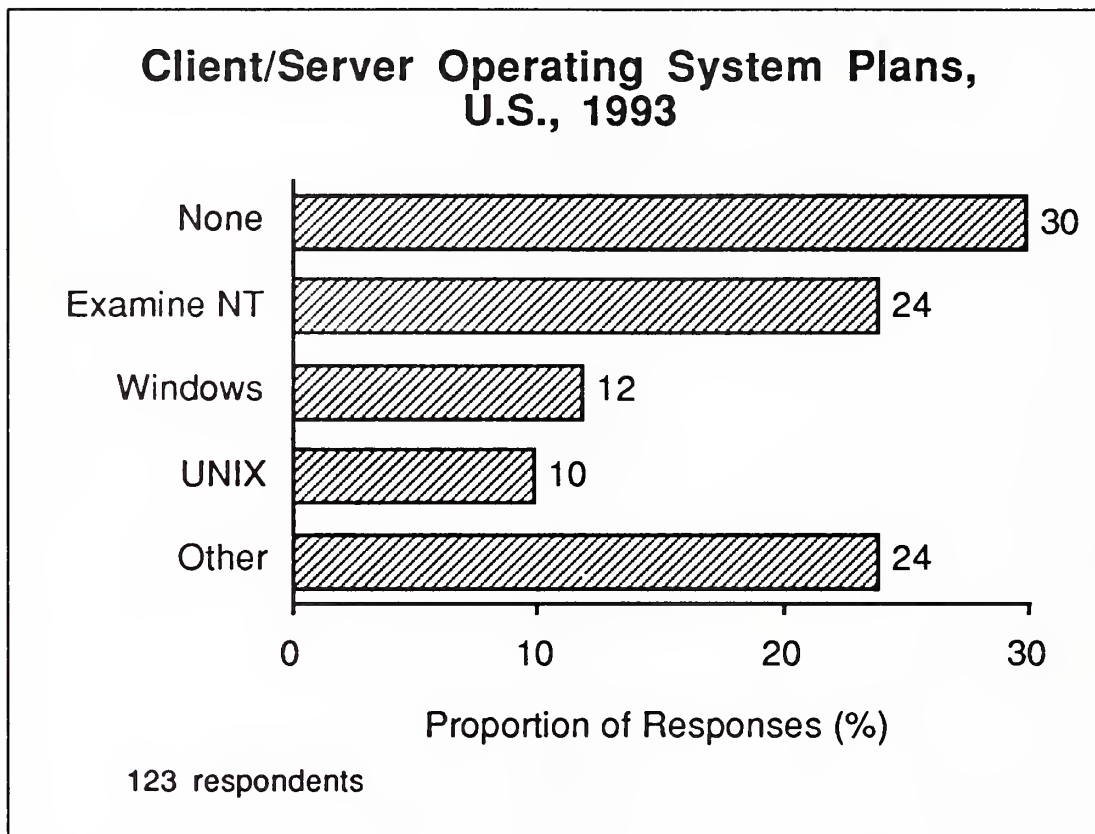


In the U.S. over 100 IS managers were interviewed in the same period as part of a different research programme. The result of this research, Exhibit

IV-4, shows Windows and Windows NT as potentially much more popular than UNIX as a server operating system.

This inconsistency between the European and U.S. preferences means that vendors will continue to have to support their software and services across a variety of operating systems. The fact that the operating systems are more independent of the hardware vendor than in the past has not simplified the task for the customer of deciding on standards. The variety of "standard" operating systems in use will increase compared to a few years ago.

EXHIBIT IV-4



3. New services demand is primarily network-centred

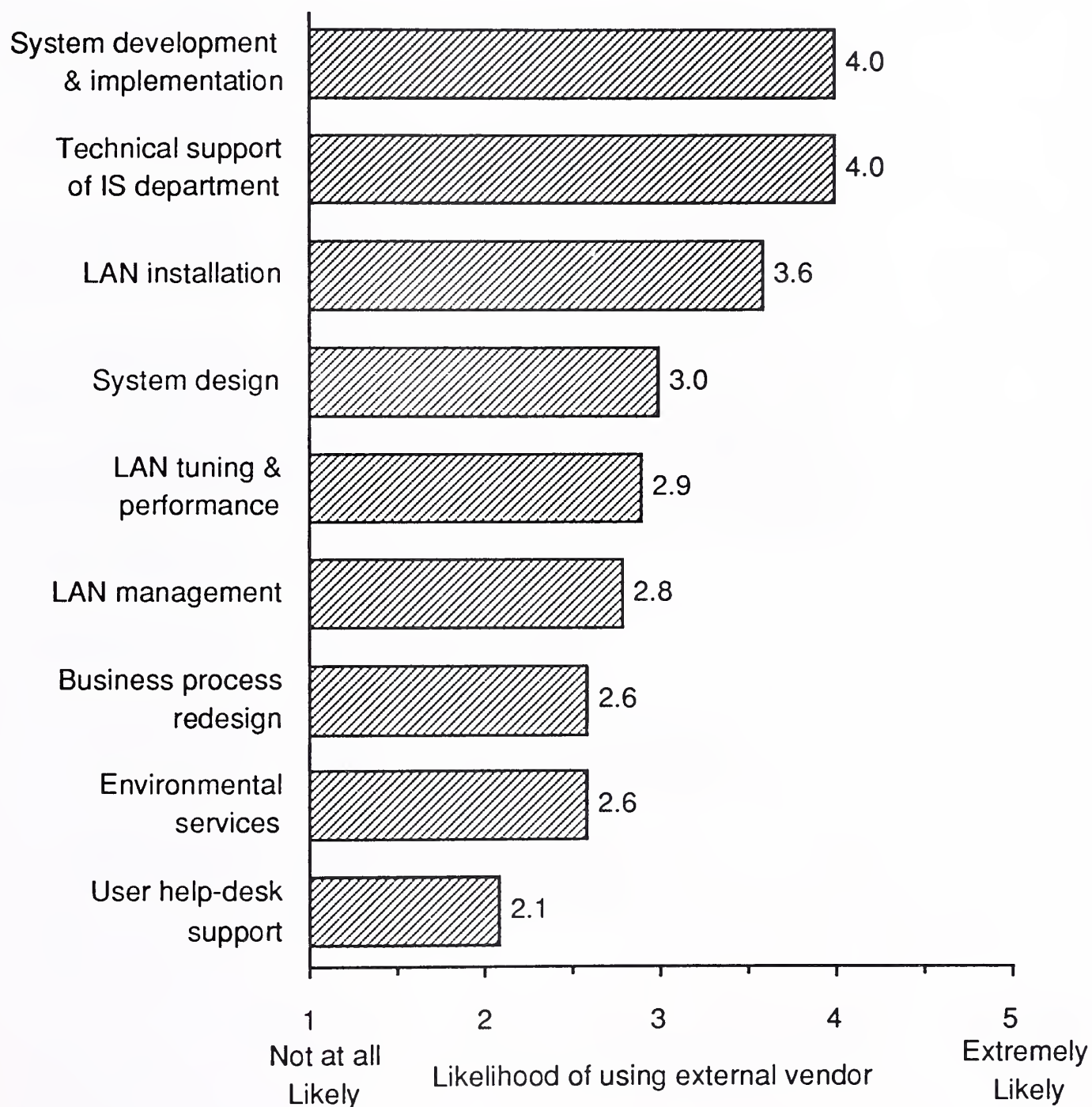
The move to client/server presents most organisations with obstacles related to the novelty of new products and architectures. These are manifest as:

- Limited in-house product knowledge
- Low levels of skill in applying new technology
- The prospect of a long learning curve

The natural reaction is to turn to vendors for help. Exhibit IV-5 shows the mix of services most in demand from IS management implementing or planning client/server systems. New services related to local area networks (LANs) feature strongly after the more usual development, implementation and support functions.

EXHIBIT IV-5

Principal Client/Server Services Required by IS Management, Europe, 1993



Sample of 19 IS managers

The implication for vendors is that IS has recognised the need for services and products which help them to manage network resources more effectively. Client/server networks in which computing resources and information is widely distributed are still awaiting the types of resource management tools commonly available for datacentre systems.

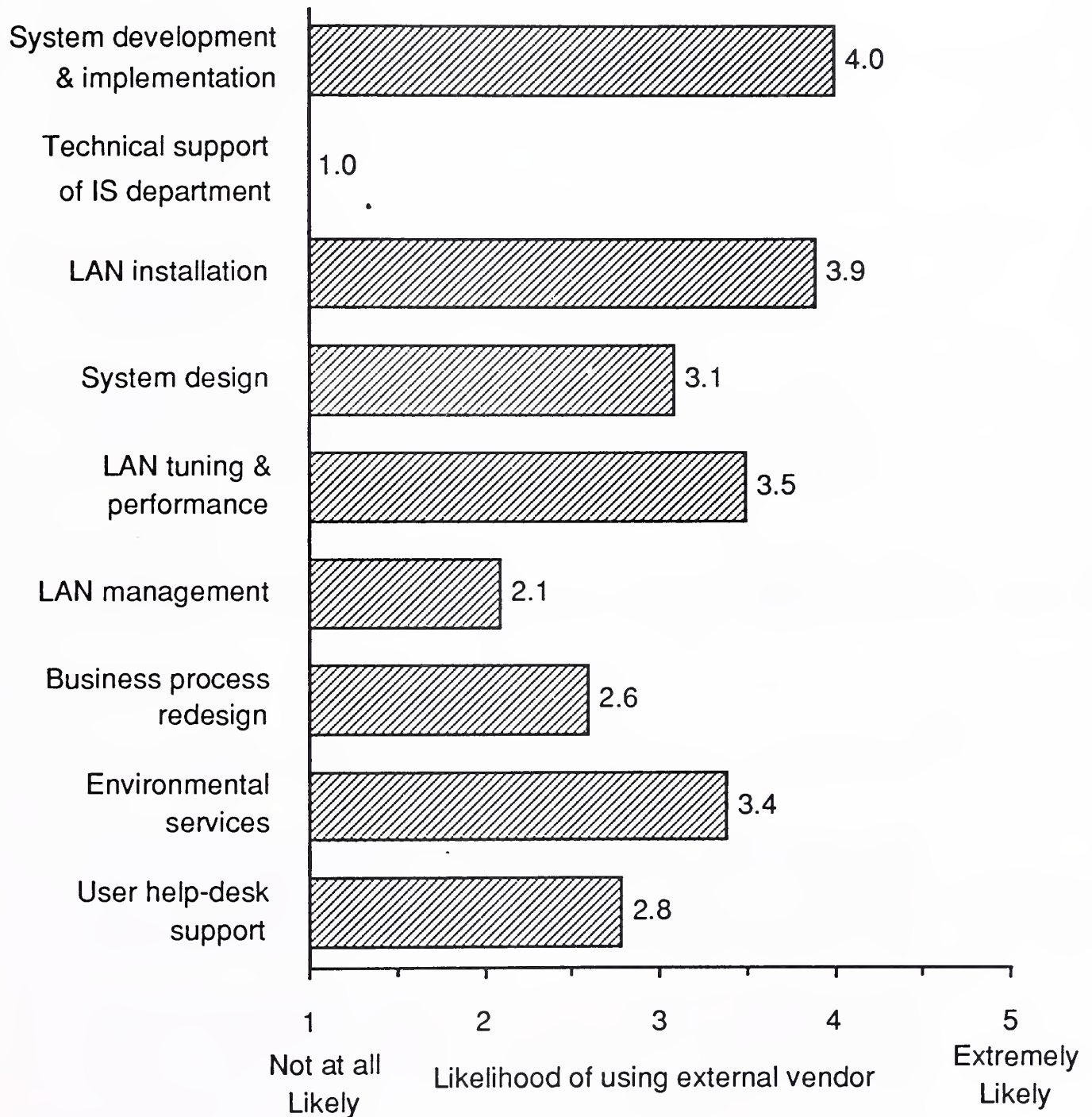
The response from IS indicates little demand for services which could assist them with business process redesign (BPR), environmental services or the support of user help-desks. INPUT's researches indicate that these are all areas where demand is increasing fast as vendors launch new initiatives. But there is clearly some way to go before they are mainstream services in the eyes of IS management.

The opinions of operational users differ from those of IS, as the next exhibit shows. However network-based services are just as important to the users, particularly network installation.

Both groups of respondents, IS and operational users, declare high interest overall in contracting all these types of service. It will be difficult, in all but the very largest organisations, for customers to keep abreast of new client/server products and technology. As a result these same customers anticipate a growing reliance on external vendors throughout the life of their client/server systems.

EXHIBIT IV-6

Principal Client/Server Services Required by User Management, Europe, 1993



Sample of 19 operational users

C

IS Management Struggles to Retain Buying Power

1. Increasing buying power of user management

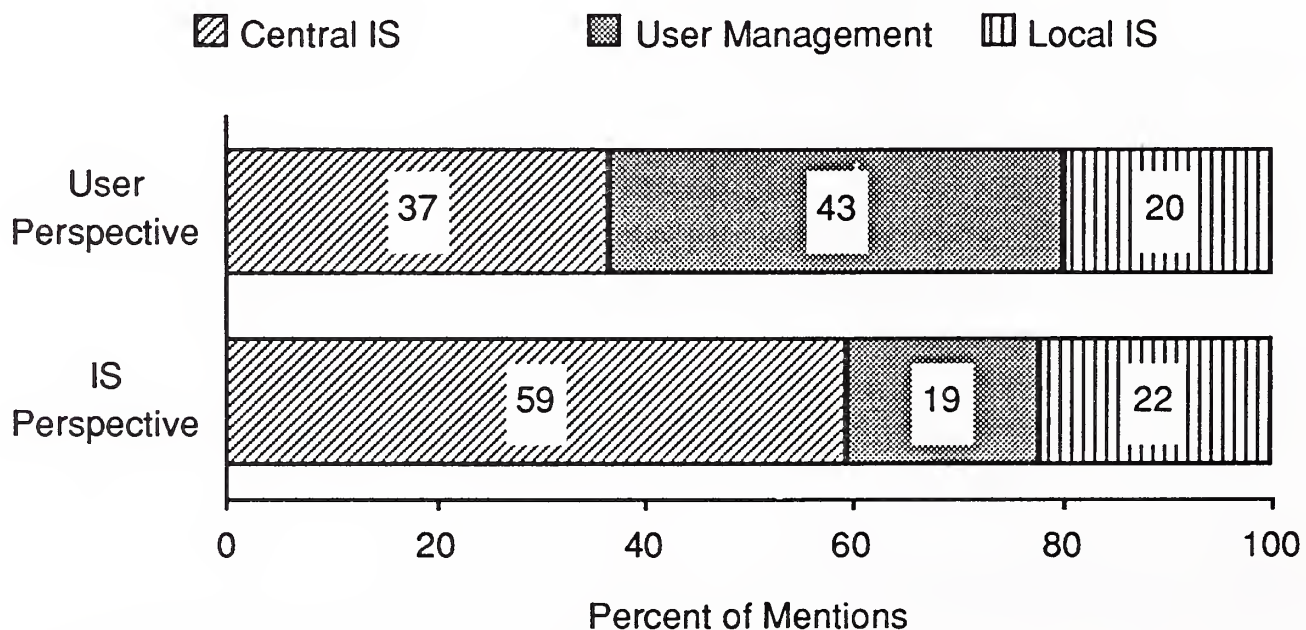
The opinions of user management and IS management still differ widely when it comes to identifying who makes IT purchasing decisions. The buying power of users is steadily increasing and in terms of spending on software and services, it already exceeds the buying power of central IS management. But IS management in Europe does not yet recognise just how much their purchasing responsibility has been reduced, or that this trend will continue.

As client/server products are released onto the market, there will be a surge in demand with older technology being replaced. Even looked at pessimistically, this will create an average 40% growth in spending on client/server application software products.

A key factor for vendors will be determining who to sell to. Exhibit IV-7 shows customer opinions about who the principal decision makers are today.

EXHIBIT IV-7

Principal Decision Makers for Applications Software Products, Europe, 1993



Sample of 38 operational user and IS managers

Clearly there is not much agreement on this topic between the IS management and the user management. There is consistency in agreeing with the role of "local" IS. But central IS is much more important in the eyes of the IS management themselves than in the eyes of the users. The users see themselves most often as the principal decision makers for application software products.

The implications for vendors used to selling solutions to IS management are serious. Vendors cannot afford to ignore one party in favour of the other:

- Even when IS believes they are the key or sole decision maker, user management may exercise a power of veto or control the budget
- Similarly, if the prospective customer is a user or business manager, then IS management may strongly influence the final product/vendor choice.

2. IS managers continue to control IT infrastructure

Looking at demand for the whole range of software and services included in INPUT's definition of information services, the change to client/server environments will have a massive impact on market demand. Change will create at least 30% growth per year in client/server-based software and services.

The challenge for vendors will be the speed with which they can respond to this change in demand. Vendors must re-design many of their own products and re-engineer their internal processes:

- Introduce client/server products and services
- Re-skill their professional staff in new technology and business process knowledge
- Invest in new tools, methods and software products.

For many highly technical requirements, supporting the IS infrastructure, IS management will remain the key decision makers. Exhibit IV-8 shows the difference in attitude towards this area. The IS infrastructure of an organisation can be considered as the backbone of computing resources. For example:

- Datacentre operations and management
- Corporate data network growth
- Common widely-used applications
- Business critical applications development, maintenance and management.

There is still a significant difference of opinion between user and IS management. But both agree that central IS management is the key decision maker for purchases relating to the IS infrastructure.

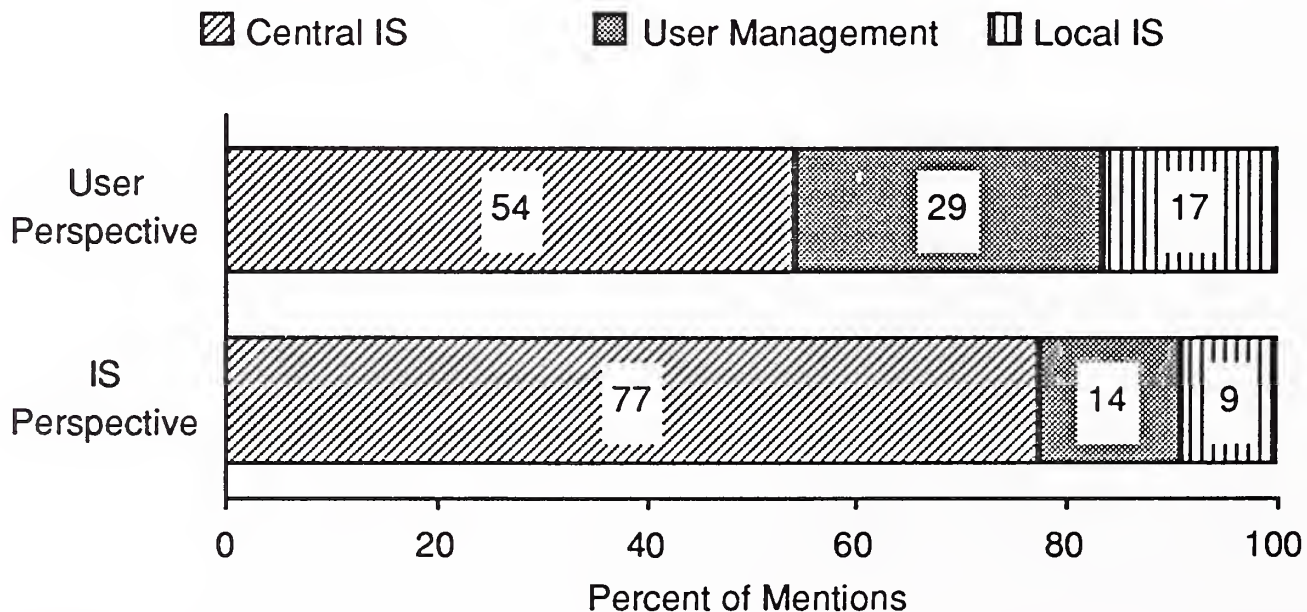
3. Client/server changes the focus for software and service sales

These two exhibits indicate there is a wide gulf between IS professionals and their "customers", the user management, as to who makes the principal decisions about buying IT systems. Vendors will have to cater for this difference of opinion for many years yet. It seems very likely that users will continue to increase their financial control over which client/server systems are bought in future. At the same time, IS management must come to terms with a new role as consultants to their users, rather than system providers.

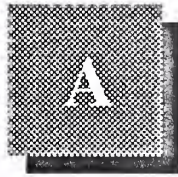
Software and services vendors selling client/server application solutions must therefore focus on selling to operational user management. Vendors selling elements of the IS infrastructure should continue to focus their sales effort on the IS management, but recognise users expect to exercise more budgetary control even in these decisions.

EXHIBIT IV-8

Principal Decision Makers for IS Infrastructure, Europe, 1993



Sample of 38 operational user and IS managers



Market Forecast Database

EXHIBIT A-1

Information Services Market Database, Client/Server-Related, Europe, 1993

Delivery Mode	1993 (\$B)	Optimistic 1998 (\$B)	Pessimistic 1998 (\$B)	Optimistic CAGR (%)	Pessimistic CAGR (%)
Professional Services	5.0	27	19	40	30
- IS Consulting	1.4	5.1	4.3	30	25
- Education & Training	1.0	3.1	2.4	25	20
- Custom Software	2.7	19	12	45	35
- Application Management	0.0	0.4	0.3	85	70
Systems Integration	2.4	11	9	35	30
Systems Operations	0.2	2.1	1.5	60	50
Processing Services	0.4	1.2	0.6	25	8
Network Services	1.0	9	7	55	45
System Software Products	1.3	11	7	55	40
- Mainframe	0.1	0.5	0.2	50	30
- Minicomputer	0.4	4.5	3.4	60	50
- Workstation/PC	0.8	6.1	3.8	50	35
Applications Software Products	1.6	14	9	55	40
- Mainframe	0.0	0.1	0.0	50	30
- Minicomputer	0.3	3.6	2.7	65	55
- Workstation/PC	1.3	10	6	50	35
Turnkey Systems	6.5	19	16	25	20
Equipment Services	3.8	17	14	35	30
- Equipment Maintenance	0.7	8	6	65	50
- Environmental Services	3.0	9	8	25	20
Grand Total Information Services Market	22	112	83	40	30

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